

CLAMPING DEVICE FOR COMBINED FLOORS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a clamping device, and more particularly to a clamping device for combined floors.

2. Description of Related Art

The most popular ways to decorate a floor are to lay a carpet, to cover the floor with plastic bricks, or to use a combined floor. However, the carpet is hard to keep clean and the plastic bricks are easily worn and torn. Consequently, to cover the floor with a combined floor is the most popular way to decorate the floor, and the combined floor is usually wooden.

To lay the conventional wooden bricks on the original floor, it is necessary to nail a base member on the original floor and the combined floor is glued on the base member. Such a construction takes a lot of time and lacks effect. Furthermore, the conventional base member provides no space to absorb any change of the combined floor arising because the combined floor expands when hot and shortens when cold.

The present invention has arisen to mitigate and/or obviate the disadvantages of the conventional clamping device for combined floors.

SUMMARY OF THE INVENTION

The main objective of the present invention is to provide an improved clamping device for combined floors that has a better connection.

To achieve the objective, the combined floors includes multiple wooden bricks each having a first long side, a second long side parallel to the first long

1 side, a first short side and a second short side respectively connecting two
2 opposite ends of the first long side and the second long side. An L-shaped
3 protrusion laterally extends from the first long side and the first short side of the
4 brick and an L-shaped groove is laterally defined in the second long side and the
5 second short side of the brick for partially receiving the L-shaped protrusion of
6 two adjacent bricks. A first groove is defined laterally defined in the second
7 long side of the brick under the L-shaped groove and a second groove is
8 laterally defined in the first long side of the brick under the L-shaped protrusion.
9 A first slot and a second slot are respectively defined in a bottom of the brick,
10 wherein the first slot corresponds to the second long side of the brick and the
11 second slot corresponds to the first long side of the brick.

12 The clamping device includes multiple clamping seats each made of
13 plastic material and having a rectangular shape. The clamping seat includes a
14 protrusion with a T-shaped cross-section upwardly extending therefrom. The
15 protrusion has two opposite topsides respectively received in the first groove
16 and the second groove of two adjacent bricks. A first rib and a second rib
17 respectively extend from a top of the clamping seat and correspond to the two
18 opposite topsides of the protrusion. A guider longitudinally extends from a first
19 end of the clamping seat corresponding to the second rib. The guider has two
20 side plates longitudinally connected to the clamping seat and a connecting plate
21 connected to two free ends of the two side plates. A stub extends from the
22 connecting plate toward the clamping seat. A wing laterally extends from the
23 stub and connected to a corresponding one of the two side plates of the guider. A
24 receiving space is defined in a second end of the clamping seat for

1 longitudinally receiving the guider of the adjacent clamping seat. Two parallel
2 sidewalls and a plate upwardly extend from a bottom of the receiving space to
3 define the receiving space. An indentation is defined in a top of each of the
4 sidewalls and the plate includes two opposite sides each having a guiding
5 groove defined therein and corresponding to the two side plates of the guider so
6 that the two side plates of the guider of the adjacent clamping seat can be
7 slidably received in the two guiding groove. A cylinder inwardly extends from
8 the plate for receiving the stub of the adjacent clamping seat. A spring is
9 compressively received in the cylinder and the stub of the adjacent clamping
10 seat compresses the spring to enhance the connection between the two adjacent
11 clamping devices due to the restitution force of the spring. A gap is laterally
12 defined in the cylinder and corresponds to the wing so that the wing is slidably
13 received in the gap of the adjacent clamping seat to enhance the connection
14 between the two adjacent clamping devices.

15 Multiple lateral rods each is straddled two parallel clamping seats. The
16 lateral rod includes two opposite ends each having a hook longitudinally
17 extending therefrom. The two hooks are respectively engaged to the indentation
18 of a corresponding one of the two parallel clamping seats to assure parallel
19 relation between the two parallel clamping seats.

20 Further benefits and advantages of the present invention will become
21 apparent after a careful reading of the detailed description with appropriate
22 reference to the accompanying drawings.

23 BRIEF DESCRIPTION OF THE DRAWINGS

24 Fig. 1 is a perspective view of two clamping devices for combined

1 floors laterally connected to each other in accordance with the present
2 invention;

3 Fig. 2 is an exploded perspective view of the clamping device in fig. 1;

4 Fig. 3 is a perspective view of the clamping device of the present
5 invention and a wooden brick of the combined floor;

6 Fig. 4 is a top plan view of the clamping device of the present invention;

7 Fig. 5 is a side plan view of the clamping device in Fig. 4;

8 Fig. 6 is a side cross-sectional view of the clamping device in Fig. 4
9 along line 6-6;

10 Fig. 7 is a front cross-sectional view of the clamping device in Fig. 4
11 along line 7-7;

12 Fig. 8 is a front cross-sectional view of two clamping devices of the
13 present invention before being engaged to each other;

14 Fig. 9 is a front cross-sectional view of two clamping devices of the
15 present invention after being engaged to each other;

16 Fig. 10 is a schematic plan view of mounting the bricks of the combined
17 floor on the engaged clamping devices of the present invention;

18 Fig. 11 is a schematic plan view of mounting the bricks of the combined
19 floor on the engaged clamping devices of the present invention;

20 Fig. 12 is a schematic plan view of mounting the bricks of the combined
21 floor on the engaged clamping devices of the present invention; and

22 Fig. 13 is a top plan view of mounting the bricks of the combined floor
23 on the engaged clamping devices of the present invention.

24 DETAILED DESCRIPTION OF THE INVENTION

1 With reference to the drawings and initially to Figs. 1-7, a clamping
2 device for combined floors in accordance with the present invention comprises
3 multiple clamping seats (20) linearly connected one after one and laterally
4 connected to an adjacent clamping seat (20) by a lateral rod (30).

5 The combined floors includes multiple rectangular bricks (10) each
6 having a first long side, a second long side parallel to the first long side, a first
7 short side and a second short side respectively connecting two opposite ends of
8 the first long side and the second long side. In the preferred embodiment of the
9 present invention, the brick (10) is wooden. The brick (10) includes an
10 L-shaped protrusion (11) laterally extending from the first long side and the
11 first short side of the brick (10) and an L-shaped groove (13) laterally defined in
12 the second long side and the second short side of the brick (10) for partially
13 receiving the L-shaped protrusion (11) of two adjacent bricks (10). A first
14 groove (14) is defined laterally defined in the second long side of the brick (10)
15 under the L-shaped groove (13) and a second groove (12) laterally defined in
16 the first long side of the brick (10) under the L-shaped protrusion (11). A first
17 slot (18) and a second slot (17) are respectively defined in a bottom of the brick
18 (10), wherein the first slot (18) corresponds to the second long side of the brick
19 (10) and the second slot (17) corresponds to the first long side of the brick (10).

20 The clamping device includes multiple clamping seats (20) each made
21 of plastic material and having a rectangular shape. The clamping seat (20)
22 includes a protrusion (21) with a T-shaped cross-section. The protrusion (21)
23 has two opposite topsides respectively received in the first groove (14) and the
24 second groove (12) of two adjacent bricks (10). A first rib (23) and a second rib

1 (22) respectively extend from a top of the clamping seat (20) and correspond to
2 the two opposite topsides of the protrusion (21). The second rib (22) is received
3 in the second slot (17) and the first rib (23) is received in the first slot (18) in an
4 adjacent brick (10). A guider (24) longitudinally extends from a first end of the
5 clamping seat (20) corresponding to the second rib (22). The guider (24) has
6 two side plates (241) longitudinally connected to the clamping seat (20) and a
7 connecting plate (245) connected to two free ends of the two side plates (241).
8 Each side plate (241) includes an engager (243) inward laterally extending
9 therefrom. A stub (246) extends from the connecting plate (245) toward the
10 clamping seat (20). A wing (247) laterally extends from the stub (246) and is
11 connected to a corresponding one of the two side plates (241) of the guider (24).
12 A lever (248) longitudinally extends from the connecting plate (245) opposite
13 to the stub (246) and has a stopper (249) downward extending from the lever
14 (248).

15 Further with reference to Figs. 8-13, a receiving space (25) is defined in
16 a second end of the clamping seat (20) for longitudinally receiving the guider
17 (24) of the adjacent clamping seat (20). Two parallel sidewalls (251) and a plate
18 (253) upwardly extend from a bottom (258) of the receiving space (25) to
19 define the receiving space (25). An indentation (252) is defined in a top of each
20 of the sidewalls (251) for laterally connected to the lateral rod (30). The plate
21 (253) includes two opposite sides each having a guiding groove (255) defined
22 therein and corresponding to the two side plates (241) of the guider (24) so that
23 the two side plates (241) of the guider (24) of the adjacent clamping seat (20)
24 can be slidably received in the two guiding groove (255). A slit (254) is laterally

1 defined in the two opposite sides of the plate (253). Each slit (254)
2 communicates with a corresponding one of the two guiding groove (255) and
3 corresponds to a corresponding one of the two engagers (243) so that the two
4 engagers (243) are respectively slidably received in the two slits (254) for
5 assuring the two adjacent clamping seats (20) in a horizontal condition when
6 the two adjacent clamping seats (20) are longitudinally connected to each other.
7 A cylinder (256) inwardly extends from the plate (253) for receiving the stub
8 (246) of the adjacent clamping seat (20). The first rib (23), as described above,
9 upwardly extends from the two sidewalls (251) and the cylinder (256). A spring
10 (36) is compressively received in the cylinder (256) and the stub (246) of the
11 adjacent clamping seat (20) compresses the spring (36) to enhance the
12 connection between the two adjacent clamping devices (20) due to the
13 restitution force of the spring (36). A gap (257) is laterally defined in the
14 cylinder (256) and corresponding to the wing (247) so that the wing (247) is
15 slidably received in the gap (257) of the adjacent clamping seat (20) to enhance
16 the connection between the two adjacent clamping devices (20) when
17 connecting the two adjacent clamping seats (20). An aperture (259) is defined
18 in the bottom (258) for receiving the stopper (249) of the lever (248) of the
19 adjacent clamping seat (20) for holding the adjacent clamping seat (20) in
20 place.

21 The lateral rod (30) straddled two parallel clamping seats (20). The
22 lateral rod (30) includes two opposite ends each having a hook (31)
23 longitudinally extending therefrom. The two hooks (31) respectively engaged
24 to the indentation (252) of a corresponding one of the two parallel clamping

1 seats (20) to assure parallel relation between the two parallel clamping seats
2 (20). A cushion (not shown) is attached to a bottom of the clamping seat (20) for
3 absorbing vibration and reducing noise.

4 The multiple clamping seats (20) are arranged to a series of parallel strip
5 for combining the bricks (10) and every two parallel strips of clamping seat (20)
6 are connected by multiple lateral rods (30). The bricks (10) sequentially
7 straddle on the series of parallel strip of the clamping seats (20). The lateral
8 bricks (10) are interlaced relative to each other so that the middle portion of
9 each of the bricks (10) is securely connected to a corresponding one of the
10 clamping devices (20). The first groove (14) and the second groove (12) of the
11 two adjacent bricks (10) are combined to form a T-shaped passage for receiving
12 the protrusion (21). The brick (10) will make the stub (246) of the clamping seat
13 (20) push the spring (36) of the adjacent clamping seat (20) and form a distance
14 (H) between every two adjacent clamping seat (20), and the two engagers (243)
15 are received in the two slit (254) of the plate (253) of the adjacent clamping seat
16 (20) so that the connection between every two adjacent clamping seats (20) are
17 stable. The stopper (249) of the lever (248) is engaged to the aperture (259) in
18 the bottom (258) of the adjacent clamping seat (20) to promote the convenience
19 and accuracy for assembling the clamping seats (20). The user can upwardly
20 wrench the lever (248) to make the stopper (249) disengage from the aperture
21 (259) in the adjacent clamping seat (20) and then the clamping seat (20) can be
22 easily detached from the adjacent clamping seat (20).

23 As described above, the restitution force of the spring (36) can provide a
24 better clamping effect to the adjacent clamping seats (20) and the spring (36)

1 can absorb length variation of the combined floor due to the variation of the
2 ambient temperature. Furthermore, the bricks (10) are combined without
3 needing any glue and nails, and the user only needs to pull the lever (248) of the
4 clamping seat (20) upwardly, thereby detaching the clamping seat (20) from
5 each other easily and conveniently.

6 Although the invention has been explained in relation to its preferred
7 embodiment, it is to be understood that many other possible modifications and
8 variations can be made without departing from the spirit and scope of the
9 invention as hereinafter claimed.